

FIG. 1

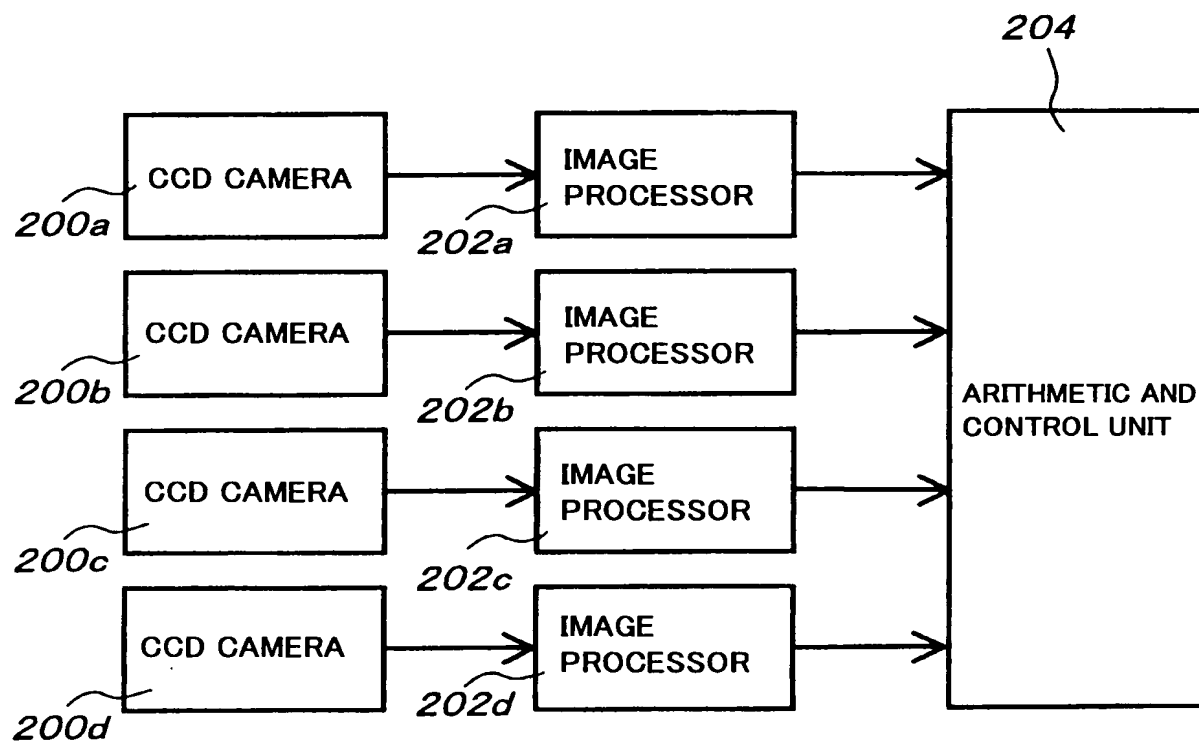


FIG. 2

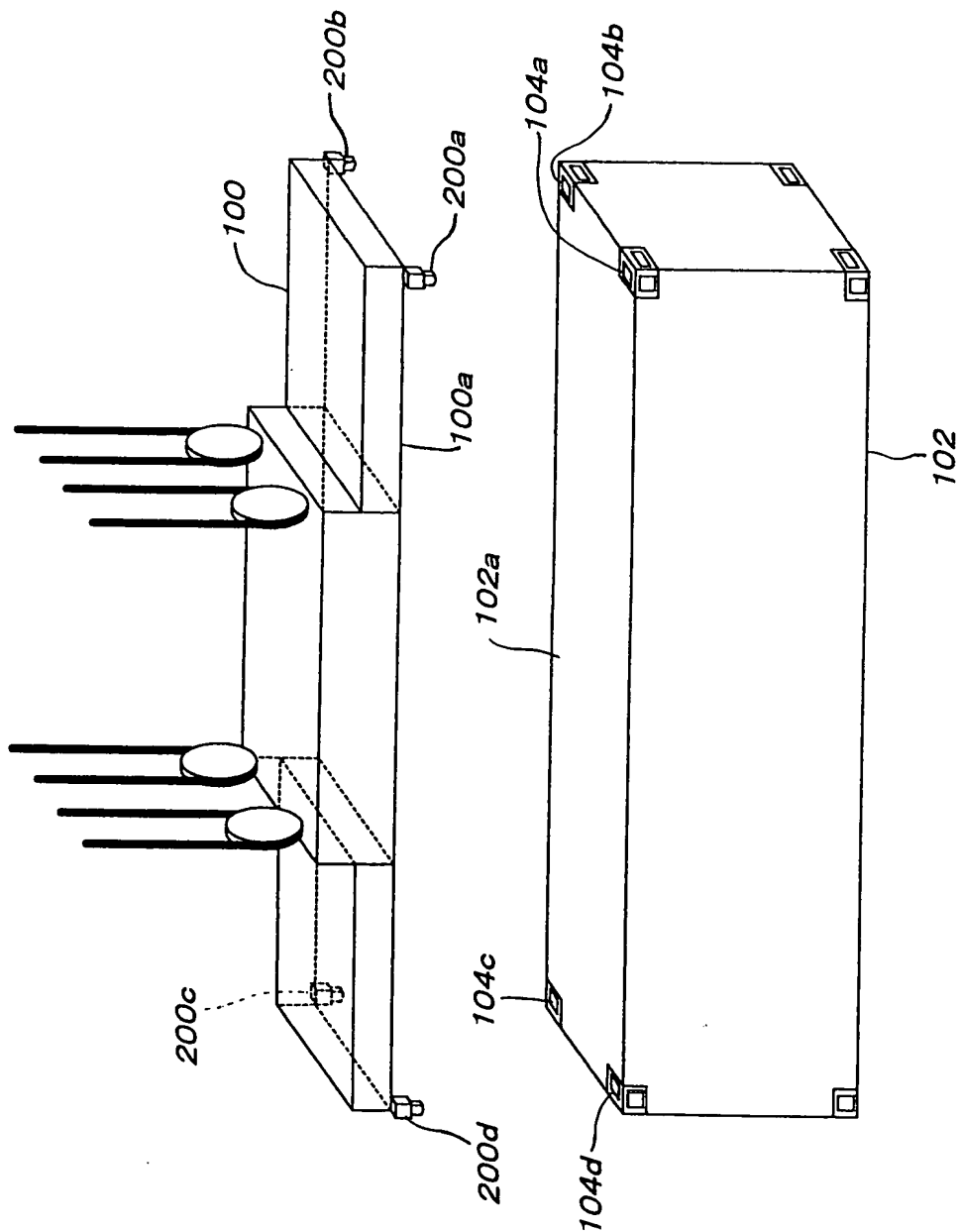


FIG. 3

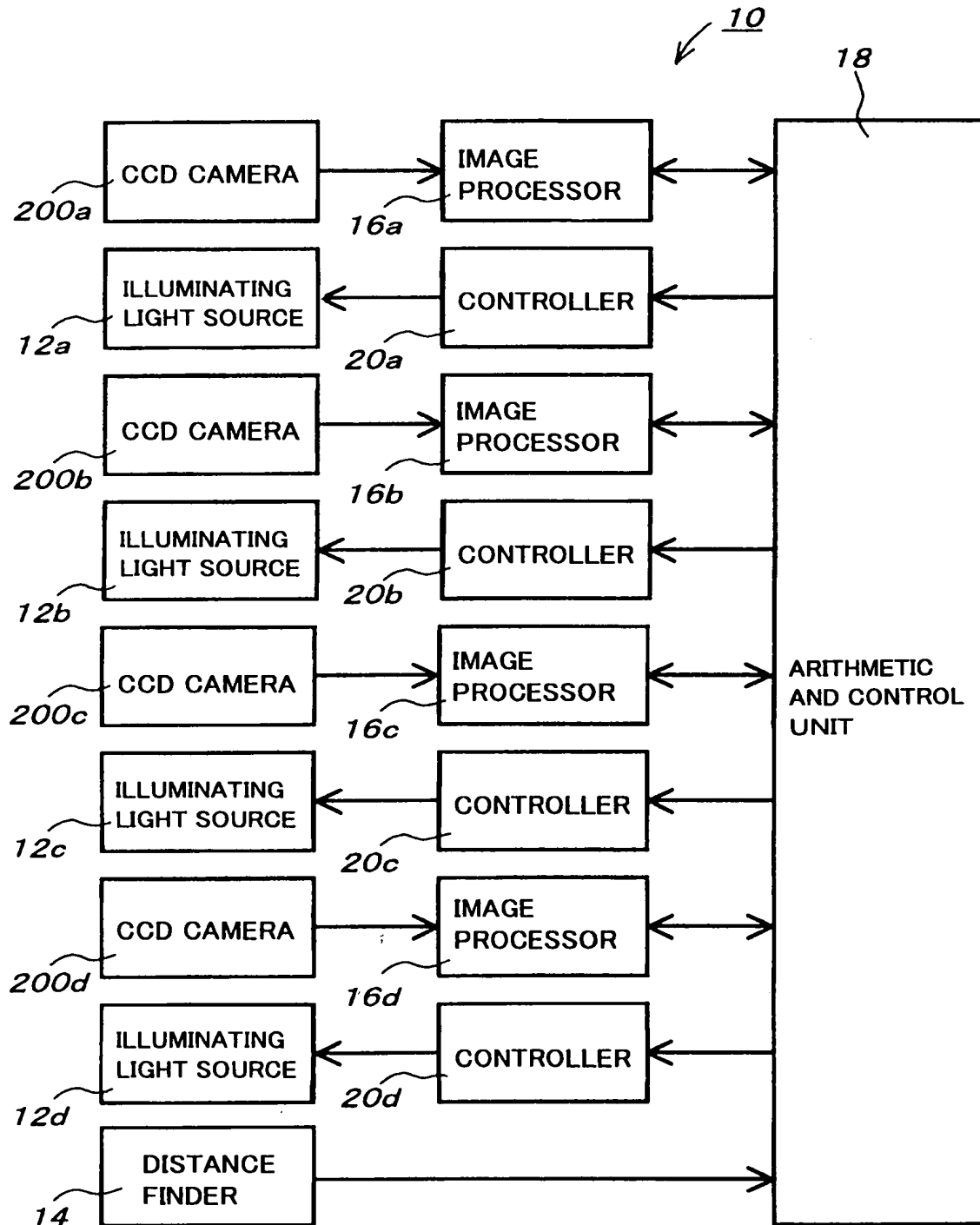


FIG. 4

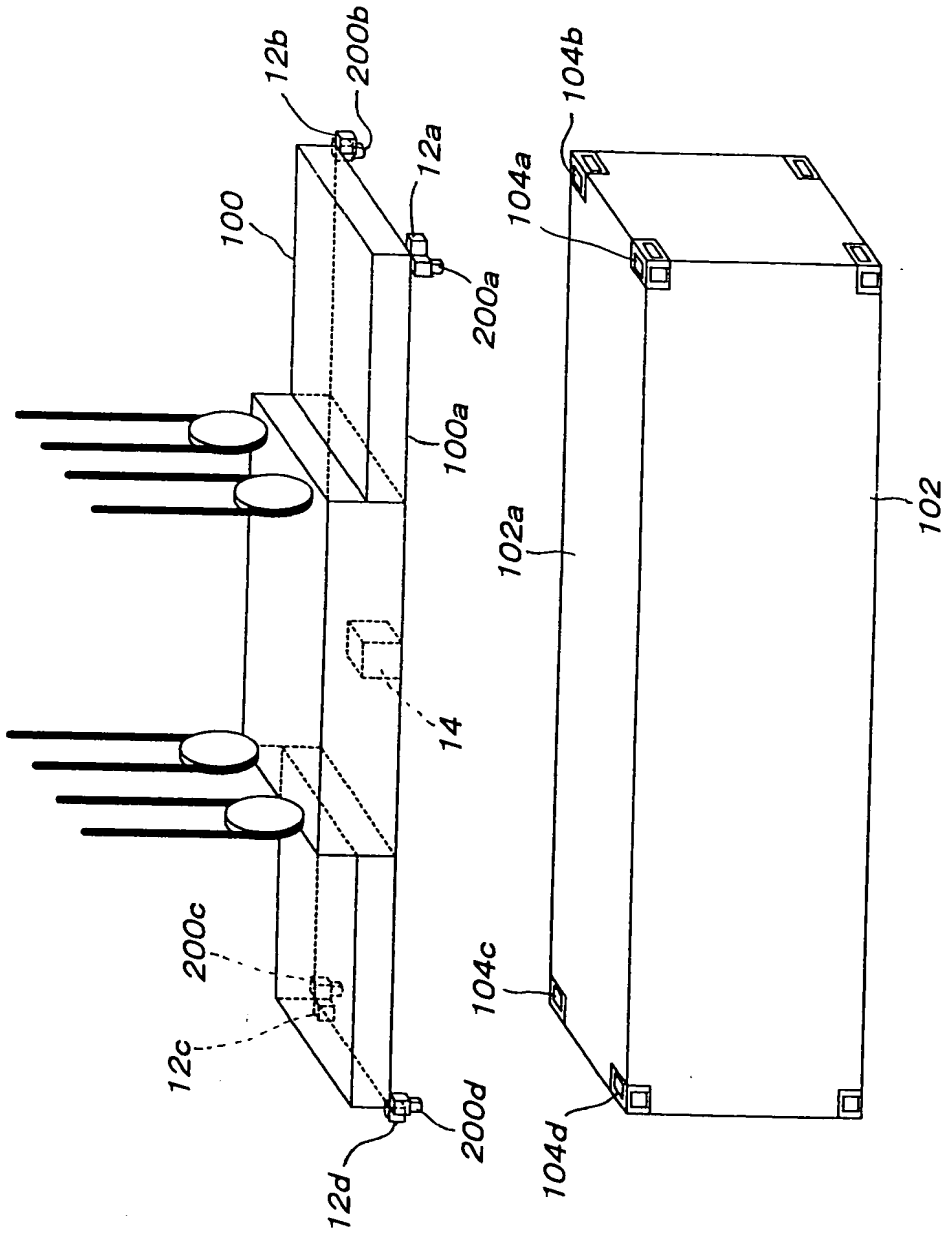
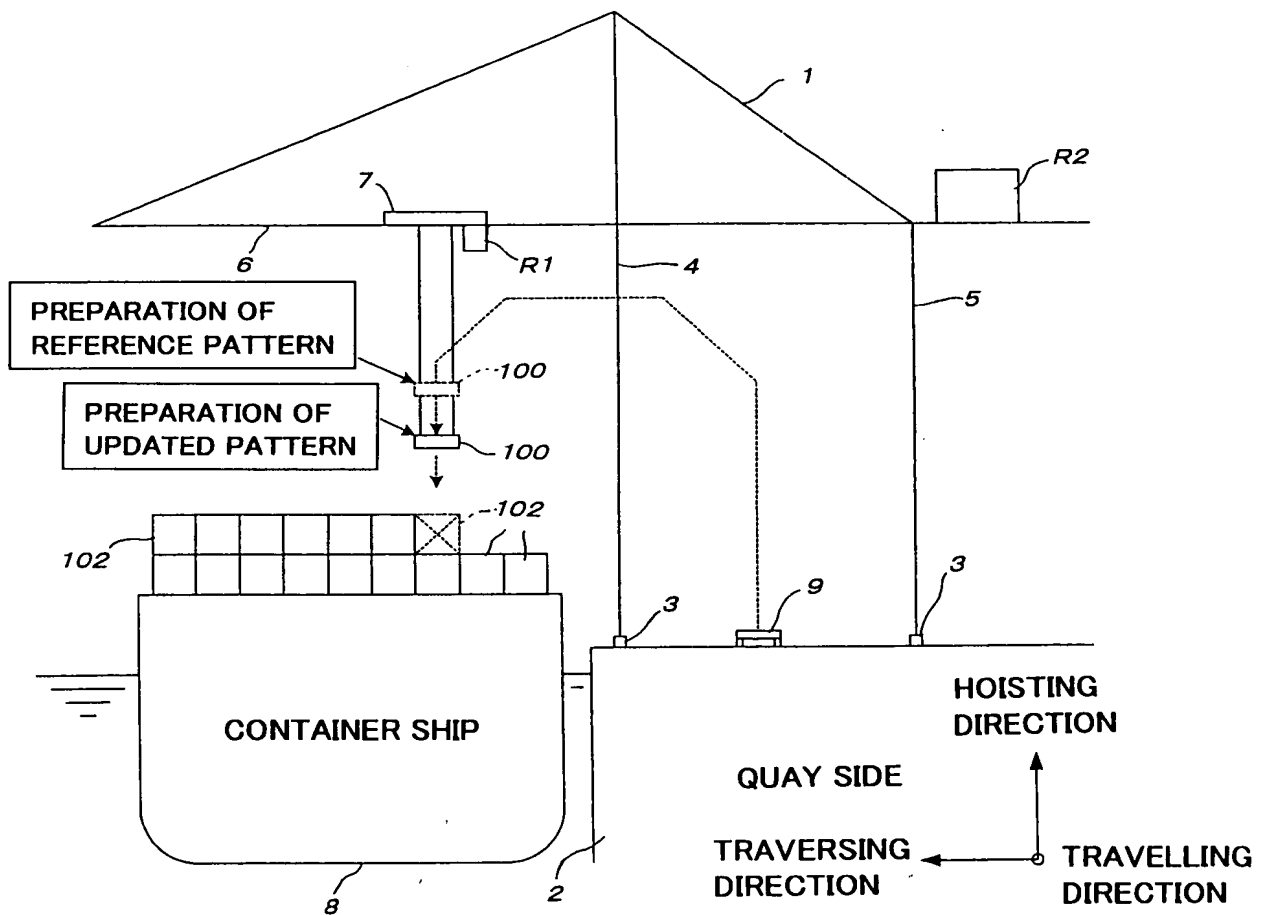
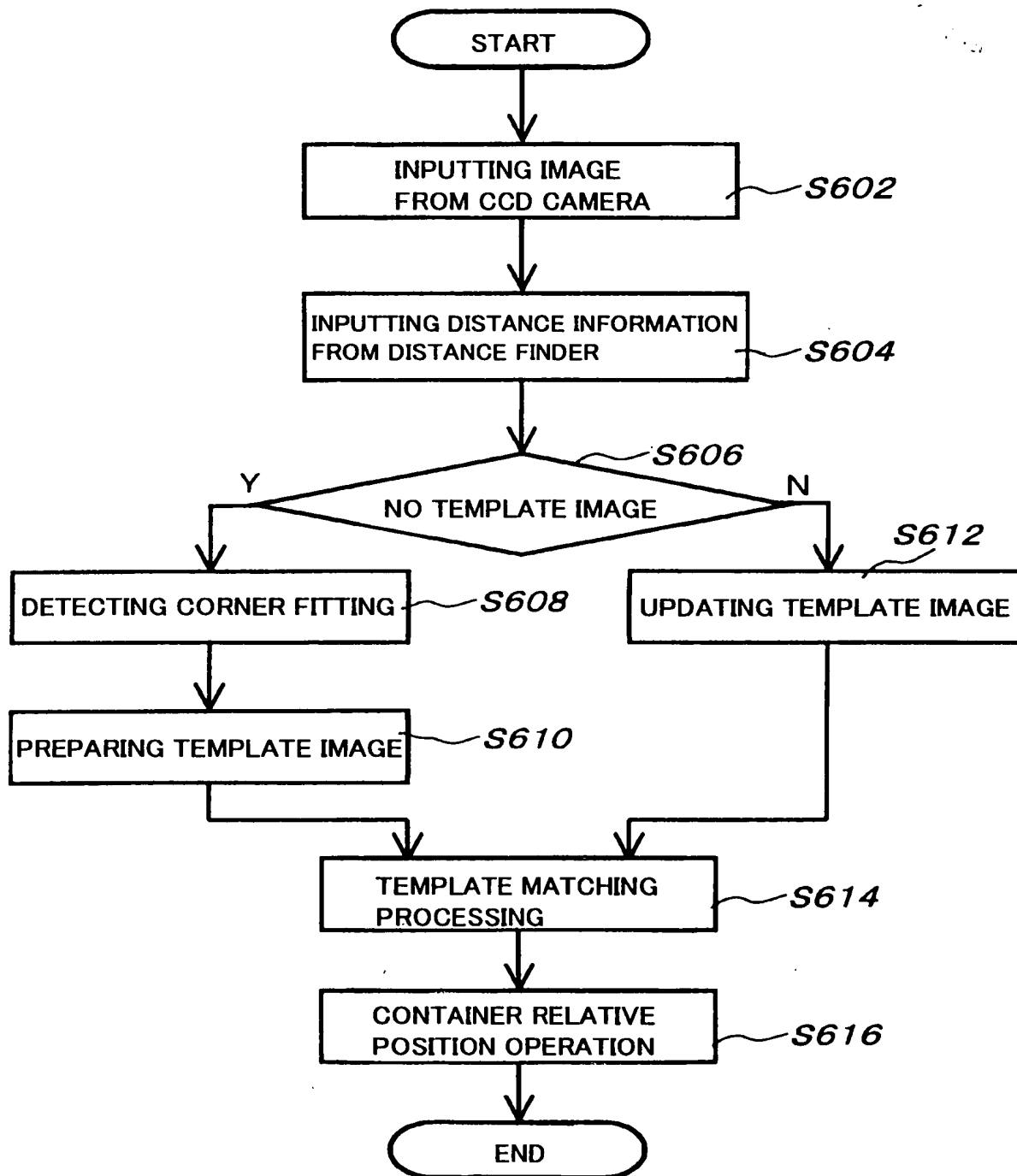


FIG. 5



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FIG. 6



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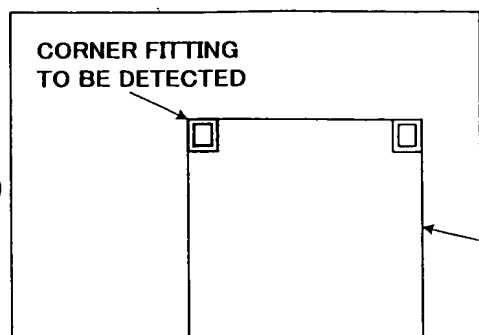


FIG. 7(a)

(a) ORIGINAL IMAGE

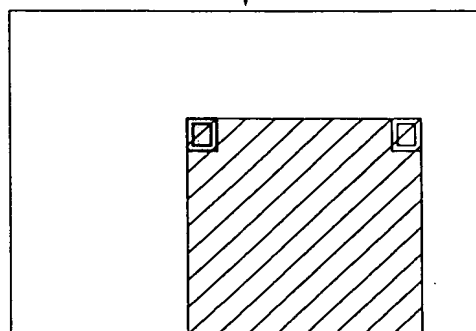


FIG. 7(b)

(b) DETECTION RESULT
ON CONTAINER
UPPER SURFACE

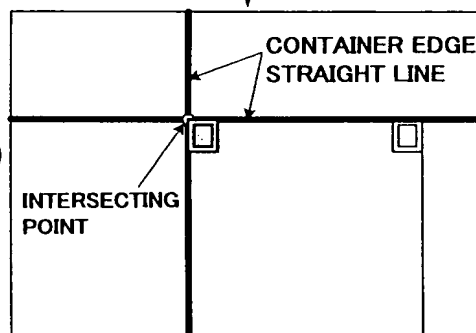


FIG. 7(c)

(c) RESULTS OF LINEAR
APPROXIMATION OF
CONTAINER EDGE AND
INTERSECTING
POINT DETECTION

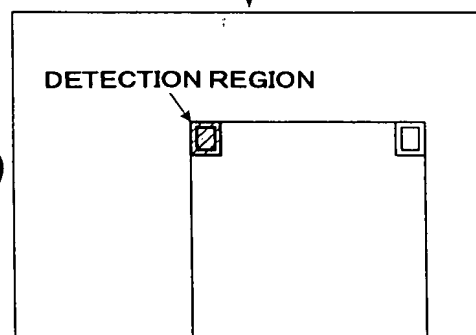


FIG. 7(d)

(d) RESULT OF CONTAINER
FITTING DETECTION

→ 
STORAGE AS TEMPLATE IMAGE
(REFERENCE PATTERN)

FIG. 8

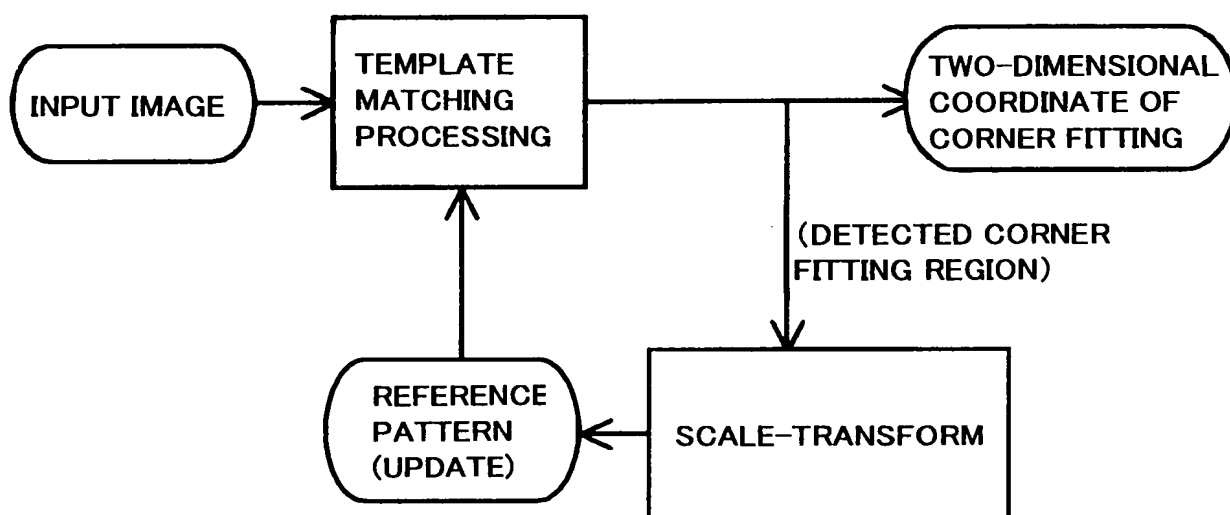


FIG. 9

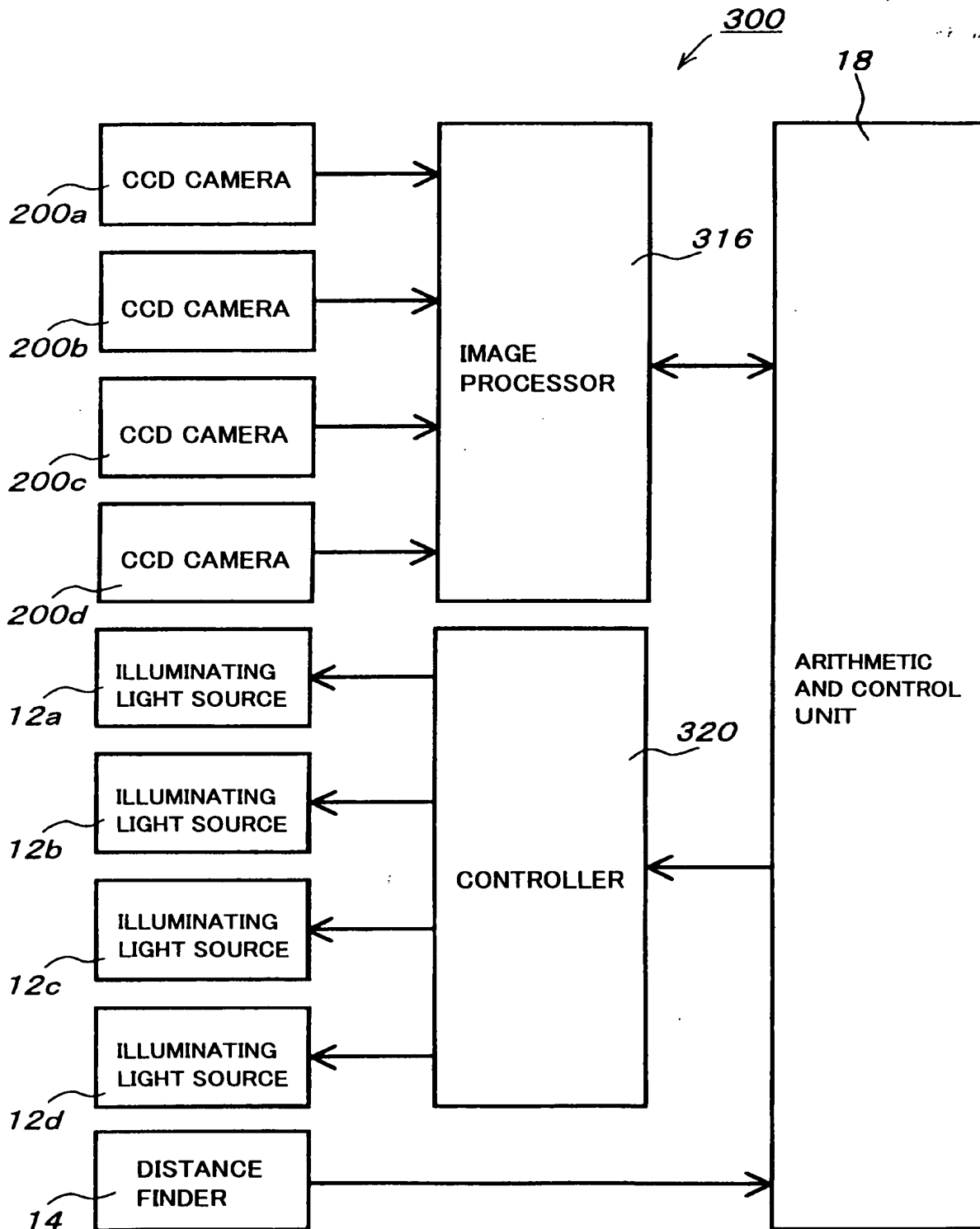


FIG. 10

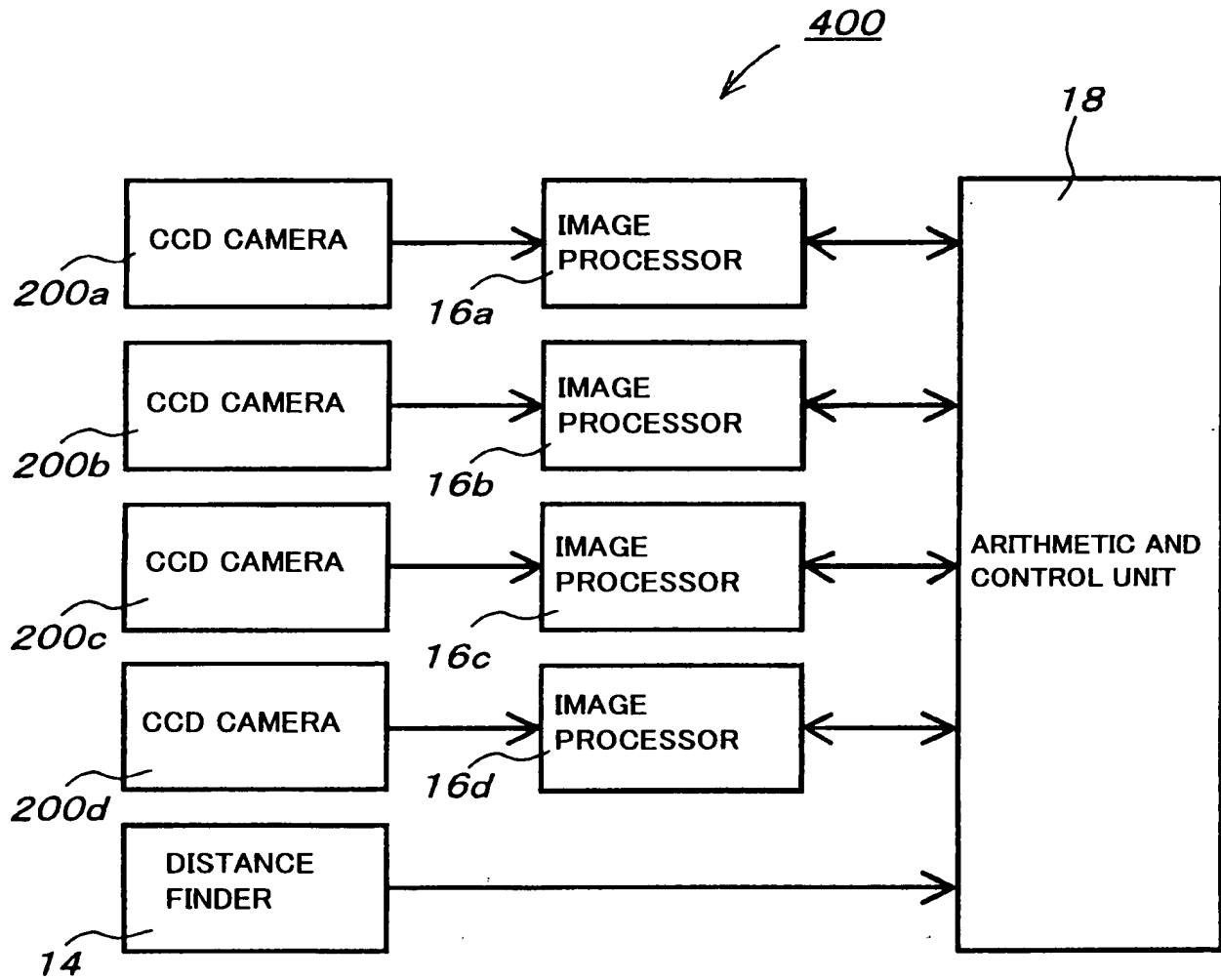


FIG. 11

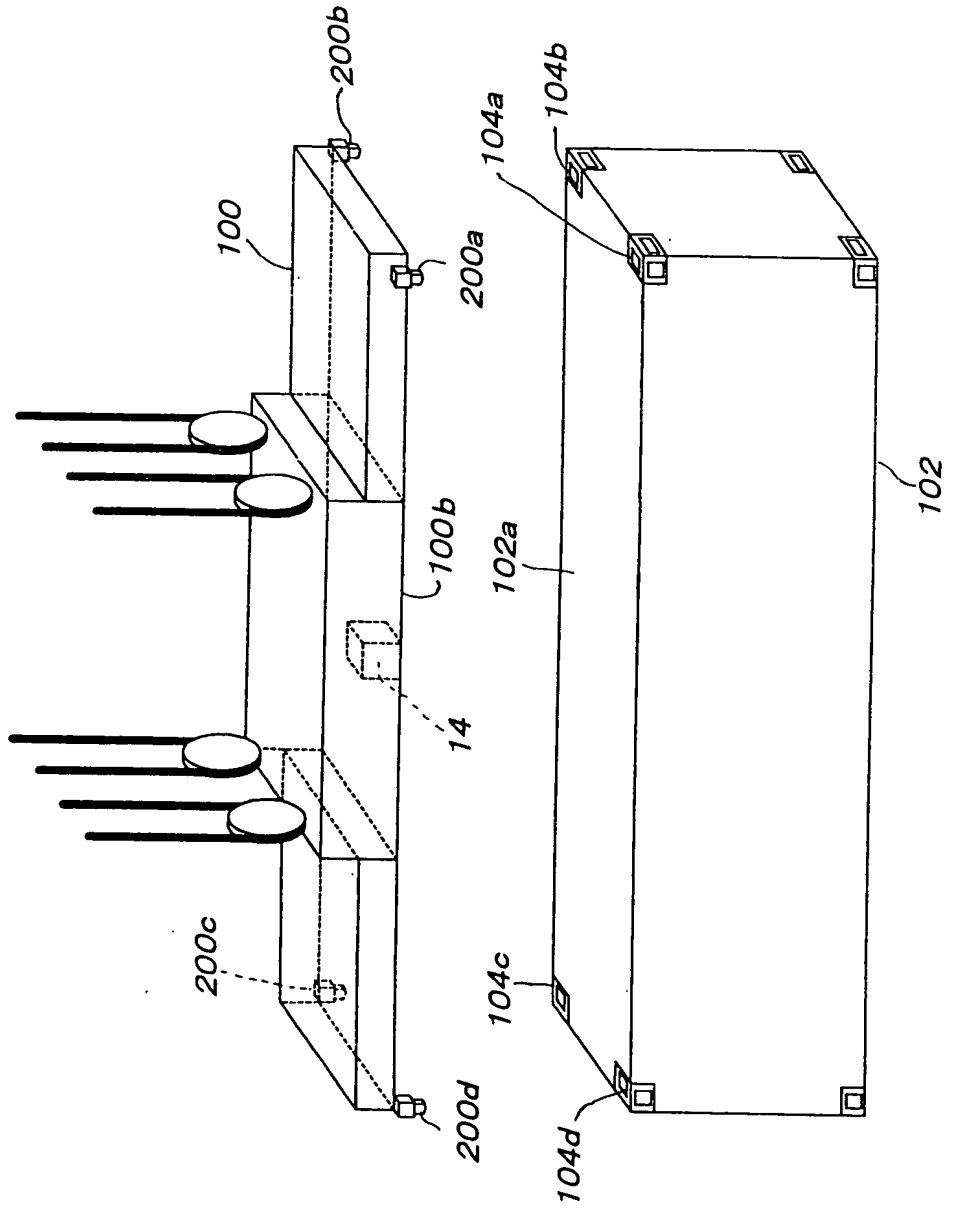
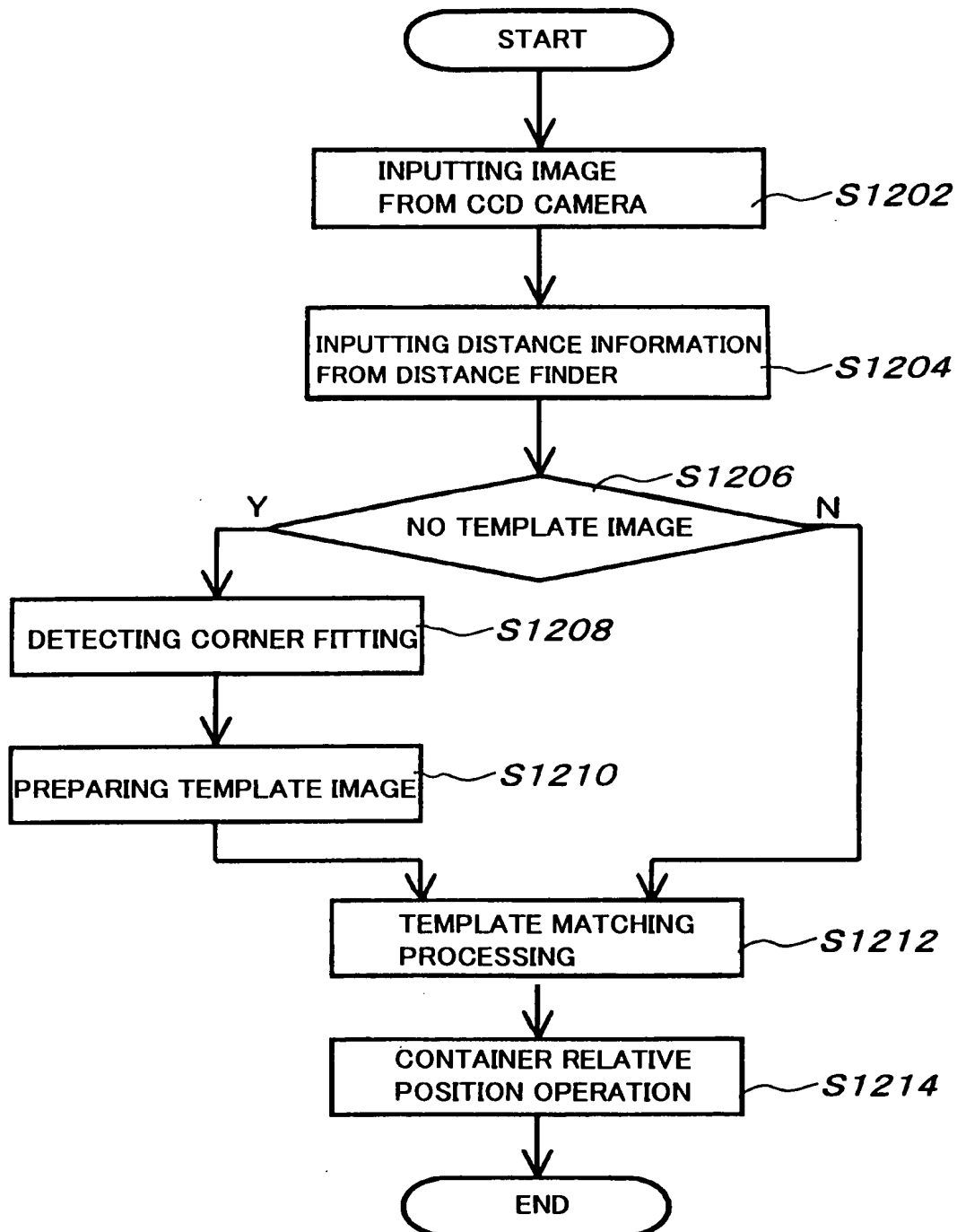
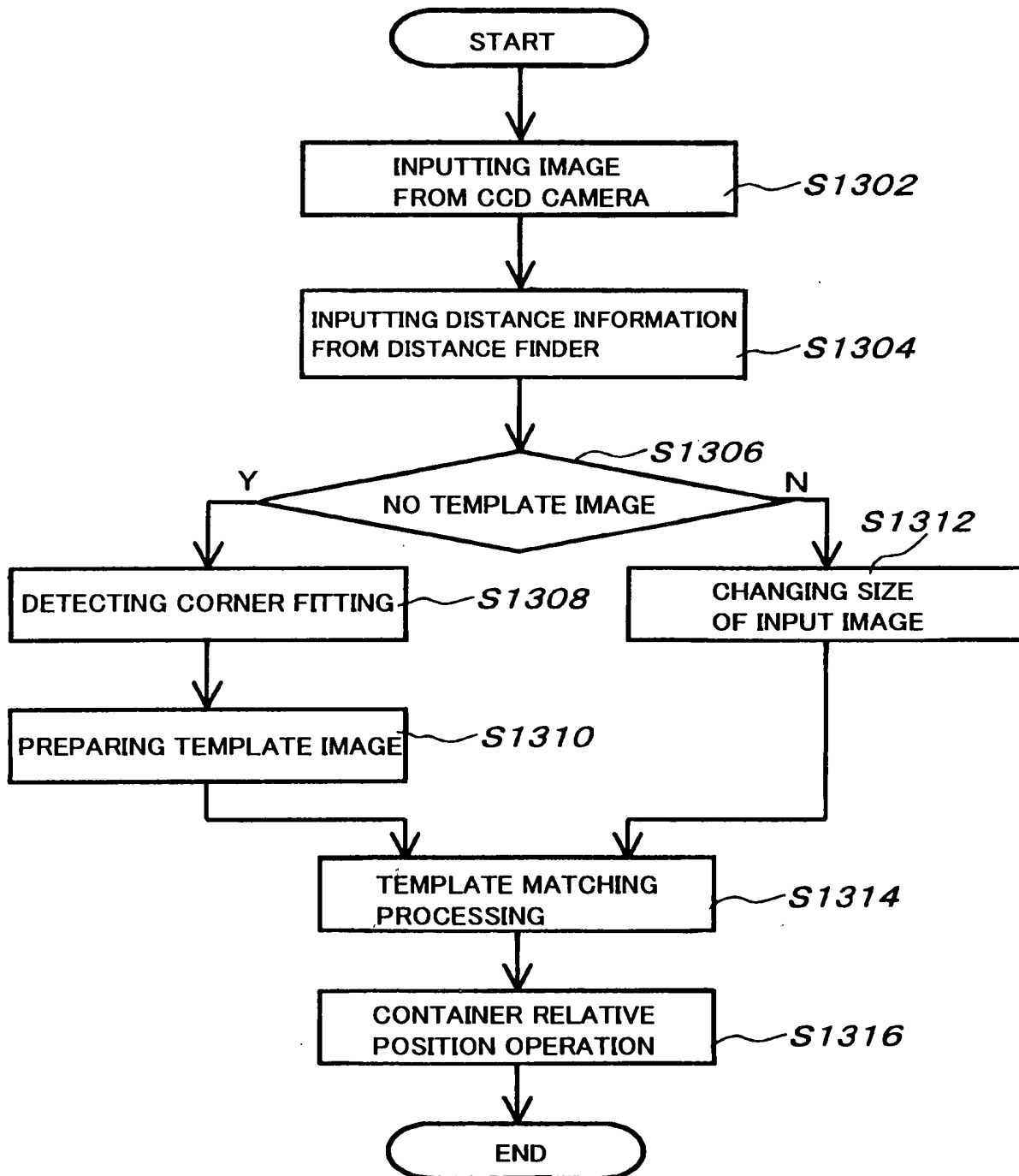


FIG. 12



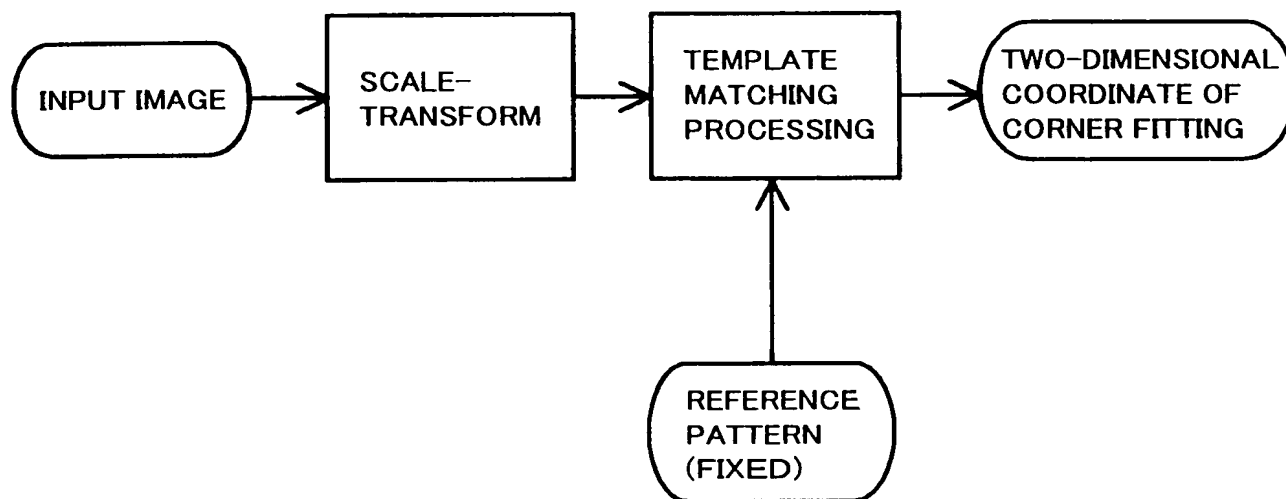
0911728-110501

FIG. 13



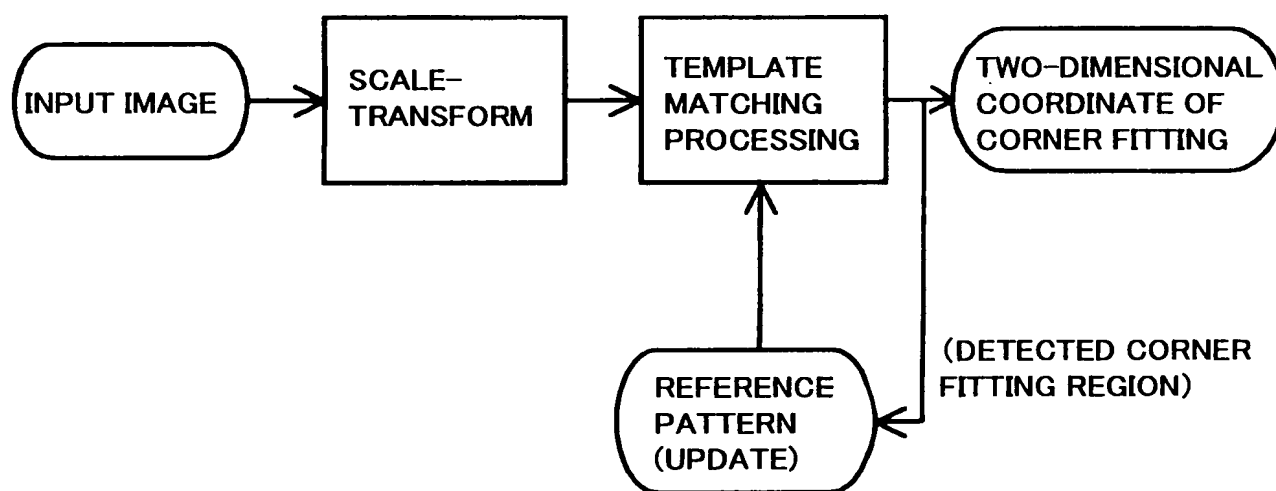
0901128-110501

FIG. 14



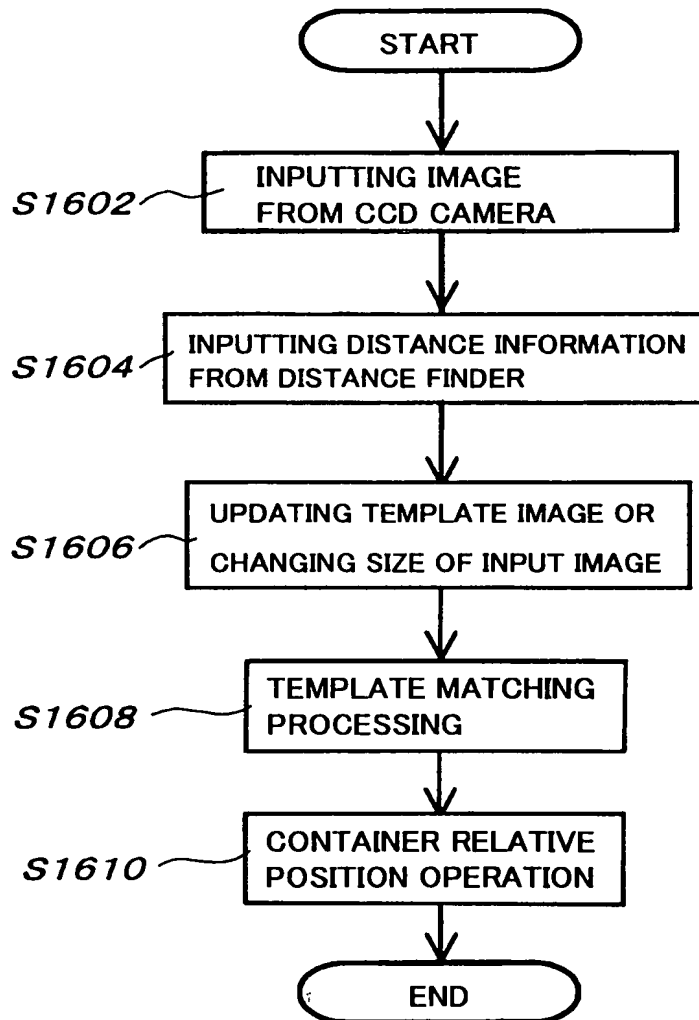
0911728-110501

FIG. 15



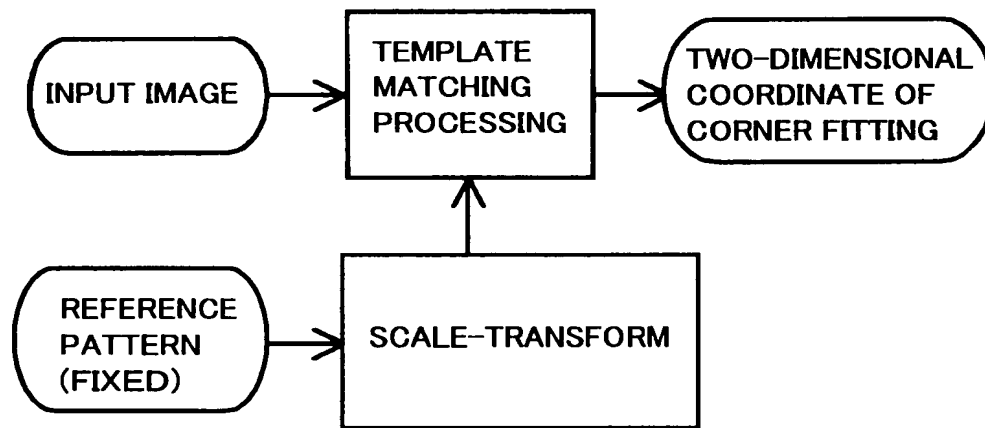
0941728-110504

FIG. 16



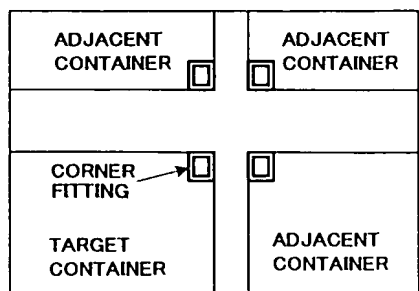
09011728-110504

FIG. 17



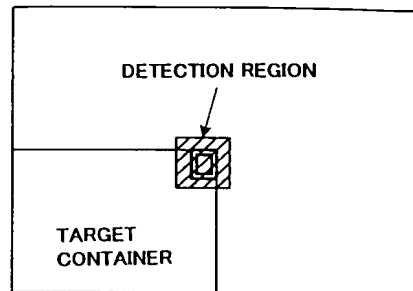
0901728-110501

FIG. 18(a)



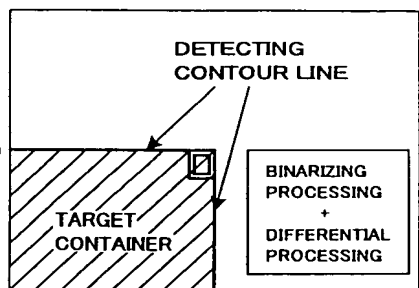
ORIGINAL IMAGE

FIG. 18(d)



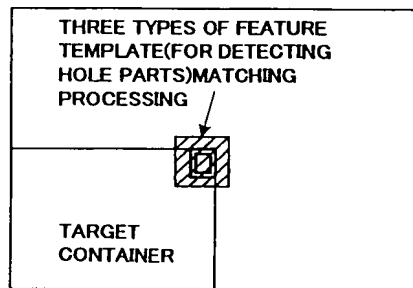
SETTING-UP OF
DETECTION REGION

FIG. 18(b)



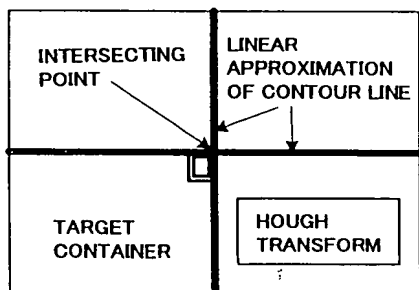
DETECTION RESULT ON
CONTAINER UPPER SURFACE

FIG. 18(e)



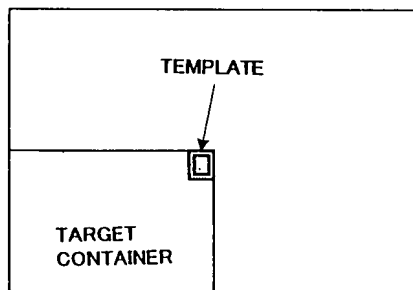
FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING

FIG. 18(c)

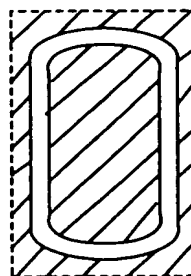
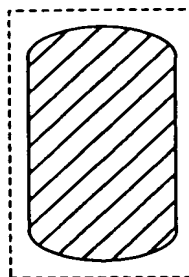
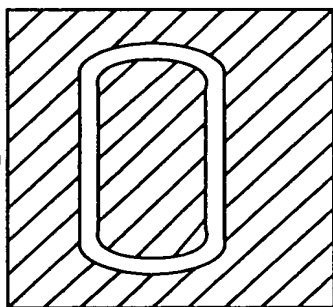
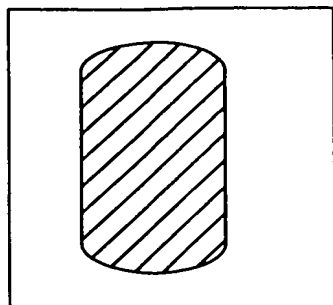


RESULTS OF LINEAR
APPROXIMATION OF
CONTOUR LINE AND
INTERSECTING
POINT DETECTION

FIG. 18(f)



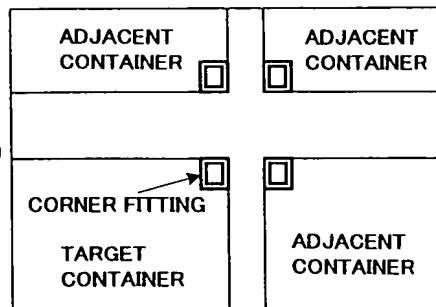
RESULT OF TEMPLATE
PREPARATION



A diagram of a rectangular block with a dashed line indicating a cut plane.

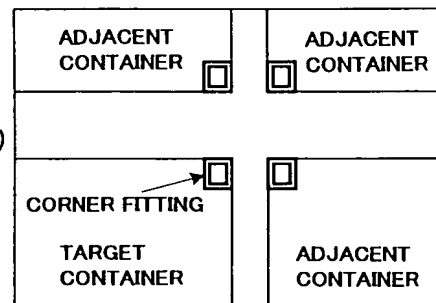
**FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
IMAGE 3**

FIG. 20(a)



ORIGINAL IMAGE

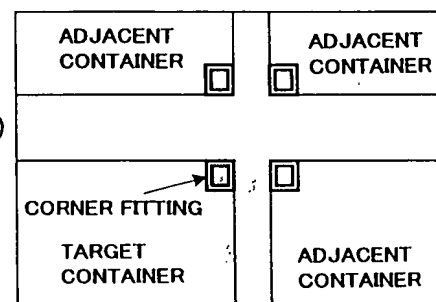
FIG. 20(b)



FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING

THREE TYPES OF FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING
(WHOLE IMAGE DATA)

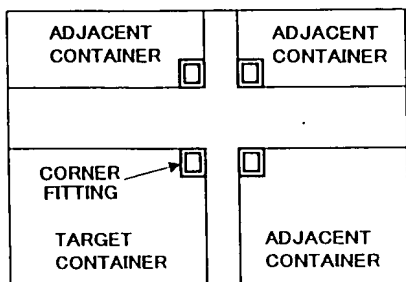
FIG. 20(c)



RESULT OF TEMPLATE
PREPARATION

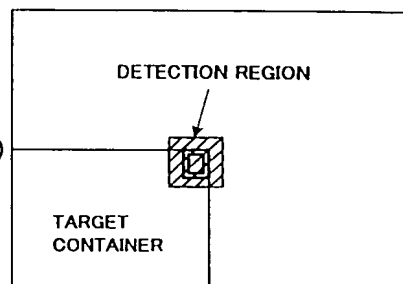
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FIG. 21(a)



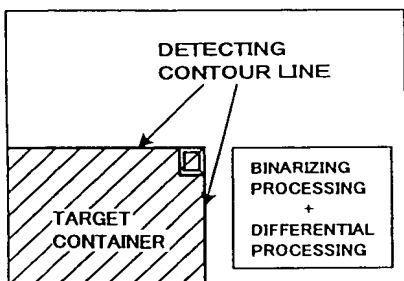
ORIGINAL IMAGE

FIG. 21(d)



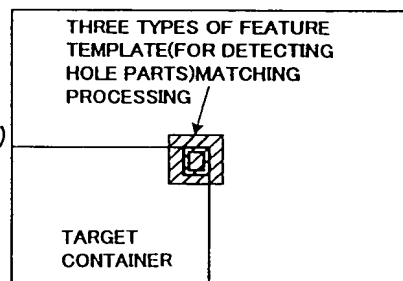
SETTING-UP OF
DETECTION REGION

FIG. 21(b)



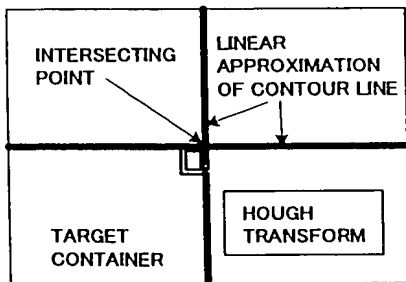
DETECTION RESULT ON
CONTAINER UPPER SURFACE

FIG. 21(e)



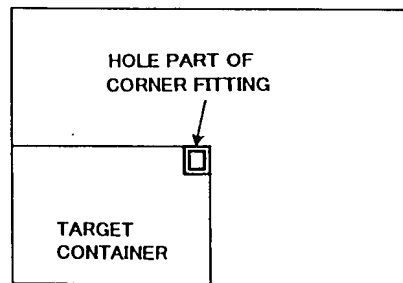
FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING

FIG. 21(c)



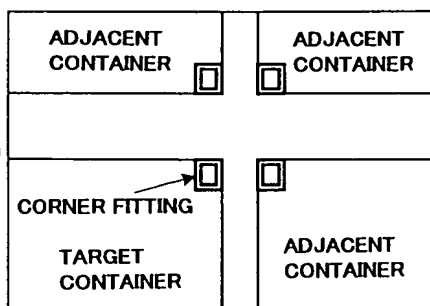
RESULTS OF LINEAR
APPROXIMATION OF
CONTOUR LINE AND
INTERSECTING
POINT DETECTION

FIG. 21(f)



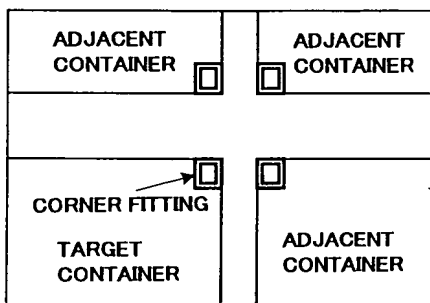
RESULT OF TEMPLATE
PREPARATION

FIG. 22(a)



ORIGINAL IMAGE

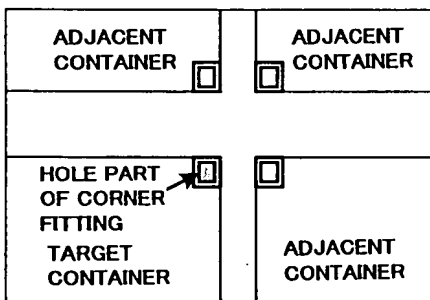
FIG. 22(b)



FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING

THREE TYPES OF FEATURE TEMPLATE
(FOR DETECTING HOLE PARTS)
MATCHING PROCESSING
(WHOLE IMAGE DATA)

FIG. 22(c)



RESULT OF TEMPLATE
PREPARATION